



		Time Local/	Path Length	Path Width	Numbe Perso	ons	Estimated Damage	July 1999
Location	Date	Standard	(Miles)	(Yards)	Killed	Injured	Property Crops	Character of Storm
MINNESOTA, North	neast							
Cass County								
Walker	04	0859CST			0	0		Thunderstorm Wind (G61)
Itasca County 21 NNE Coleraine	04	0920CST			0	0		Thunderstorm Wind (G65)
Itasca County Blackberry	04	0941CST			0	0		Hail (1.50)
Itasca County Grand Rapids	04	1000CST			0	0		Thunderstorm Wind (G50)
	Large	trees were blowr	n down. The w	ind speed is e	stimated.			
Aitkin County Hill City	04 Public	1025CST	to 60 mph ble	w down many	0 large branc	0 hes		Thunderstorm Wind (G52)
	The s	_	a estimated to	otal costs of	damage and		earance at more than	\$3.3 million for the July 4th severe
St. Louis County								
Hibbing	04	1027CST			0	0	80K	Thunderstorm Wind (G70)
	A han	iger and the termi	nal building a	t Chisholm-H	ibbing Airpo	ort suffered	d structural damage	
St. Louis County Gheen	04	1030CST			0	0		Thunderstorm Wind (G56)
Gileen		derstorm winds es	stimated at 65	mph blew dov	-		es.	Thunderstorm wind (030)
St. Louis County				_				
12 SW Virginia	04	1039CST			0	0		Thunderstorm Wind (G56)
	Thun	derstorm winds w	ere estimated	by the public	at 65 mph.			
St. Louis County Tower	04	1045CST			0	0		TI 1 (055)
Tower		trees were blowr	n down. The w	ind speed is e		U		Thunderstorm Wind (G55)
St. Louis County	Zuige	nees were sis w		ma speca is e	otiliate di			
4 E Floodwood	04	1050CST			0	0		Thunderstorm Wind (G50)
	Trees	and power lines	were blown do	own. The wind	l speed is es	timated.		
St. Louis County Hibbing	04	1052CST			0	0		Thunderstorm Wind (G61)
St. Louis County Independence	04	1055CST			0	0		Hail (0.75)
St. Louis County								
Canyon	04 A san	1055CST ni-trailer truck wa	e blown over	The wind spe	0	0 stad		Thunderstorm Wind (G60)
St. Louis Country	A sen	in-trailer truck wa	is blown over.	The wind spe	eu is estilla	ited.		
St. Louis County 7 S Biwabik	04	1107CST			0	0		Thunderstorm Wind (G50)
	Tree l	branches up to eig	ght inches in d	iameter were	blown down	n. The wind	d speed is estimated.	
St. Louis County								
6 E Hibbing	04	1112CST			0	0		Thunderstorm Wind (G55)
	Powe	r lines and 12-inc	n diameter tre	ss were blowr	down. The	wind spee	a is estimated.	
St. Louis County Babbitt	04	1120CST			0	0		Thunderstorm Wind (G50)
240010		trees were blown	n down. The w	ind speed is e		v		Thunderstorm Willia (G50)
St. Louis County								
Whiteface	04	1122CST			0	0		Thunderstorm Wind (G52)





Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Numberse Perse Killed		Estimated Damage Property Crops	July 1999 Character of Storm			
MINNESOTA, Northes	<u>ast</u>										
St. Louis County Brimson	04	1130CST			0	0		Thunderstorm Wind (G52)			
Lake County 27 NW Silver Bay	04	1130CST	d Tl		0	0		Thunderstorm Wind (G50)			
St. Louis County Cotton	04	rous trees were blo	own down. In	e wind speed	0 us estimate	oa. O		Thunderstorm Wind (G52)			
St. Louis County Cook	04 Trees v	1130CST were blown down.	The wind spo	eed is estima	0 ted.	0		Thunderstorm Wind (G50)			
		ate of Minnesota e	•			ebris clear	ance for the July 4th s	torms in St. Louis county at more than			
Lake County 40 N Silver Bay	04 Twelve	1142CST e-inch diameter tre	ees were blow	n down. The	0 wind speed	0 d is estima	ated.	Thunderstorm Wind (G50)			
Lake County 70 N Two Harbors	04 Trees a	1150CST	ere blown dov	vn near Bass	0 wood Lake	0 . The wind	d speed is estimated.	Thunderstorm Wind (G55)			
Cook County 25 NNW Grand Marais	04	1220CST			0	0		Thunderstorm Wind (G60)			
	Strong This ar quarter million hardest Twenty woman	Numerous trees and power lines were blown down. The wind speed is estimated. A widespread convective windstorm called a "derecho" swept across the Arrowhead region of northeastern Minnesota on July 4th. Strong, straight-line winds in excess of 80 mph devastated a large area of the Boundary Waters Canoe Area Wilderness (BWCAW). This area is very sparsely populated, but thousands of trees in an area approximately 30 miles long by 12 miles wide, or about a quarter million acres, were levelled. The timber loss was estimated at .5 to .75 million cords and valued at between \$12 and \$18 million. Because much of the timber was torn and splintered, the salvage value was estimated to be only about \$5 million. The hardest hit area was from Moose Lake in the BWCAW to near ELY to the Gunflint Trail, where hardly a tree was left standing. Twenty people, injured by falling trees, had to be airlifted to area hospitals. A man was crushed under a tree for four hours, and a woman was pinned under a tree with both legs broken. The state of Minnesota estimated the cost of other damage and debris clearance for Lake and Cook counties at nearly \$5 million.									

Crow Wing County					
1 S Pequot Lakes	04	1310CST	0	0	Thunderstorm Wind (G55)
	Nume	rous trees up to 36 inches in diameter were blow	vn down. T	The wind speed is estimated.	
Itasca County					
Countywide	05	0030CST 0430CST	0	0	Flash Flood
St. Louis County					
Central Portion	05	0030CST 1200CST	0	0	Flash Flood
Lake County					
South Portion	05	0220CST 1800CST	0	0	Flash Flood
St. Louis County					
Southeast Portion	05	0220CST 1800CST	0	0	Flash Flood
Cook County					
South Portion	05	0410CST 1800CST	0	0	Flash Flood





Time Local/ Length Width Persons Damage
Location Date Standard (Miles) (Yards) Killed Injured Property Crops Character of Storm

MINNESOTA, Northeast

Heavy rain from thunderstorms forming and moving repeatedly across the same areas produced flash flooding from Itasca county across the southern two-thirds of St. Louis county, into the Arrowhead region of northeastern Minnesota. Many highways and hundreds of basements on the Iron Range and the North Shore were flooded. The tracks of several railroads were washed out. Dulutt doppler radar gave rainfall estimates around 6 inches. In St. Louis county, road damage alone amounted to about \$800,000. Cook county had \$850,000 in damage, with \$250,000 in Lake county, and \$850,000 in Itasca county. The heavy rain also caused low oxygen levels in some area rivers, resulting in the death of thousands of fish.

	oxyge	on levels in some area rivers, resulting in the dea	ath of thou	sands of fish.	
St. Louis County					
2 N Island Lake	05	1425CST	0	0	Thunderstorm Wind (G50)
	Nume	erous trees were down on County Highway 4. The	he wind sp	eed is estimated.	
Cass County					
Backus	13	1715CST	0	0	Hail (1.00)
		1730ČŠT			
Cass County					
7 N Pine River	13	1802CST	0	0	Hail (1.00)
Itasca County					
Squaw Lake	15	1711CST	0	0	Thunderstorm Wind (G52)
_	Public	e-estimated winds to 60 mph knocked down 8-in	nch diamet	er trees.	, ,
St. Louis County		•			
Gheen	15	1955CST	0	0	Thunderstorm Wind (G50)
Gircu		and power lines were blown down. The wind sp			Thunderstorm Wind (G50)
	11003	and power lines were blown down. The wind s	peca is esti	matea.	
Itasca County	4.5	1055007		0	
Grand Rapids	15	1955CST	0	0	Thunderstorm Wind (G52)
	Thunc	derstorm winds were estimated by the public at	60 mph.		
Cass County					
Pillager	22	2315CST	0	0	Thunderstorm Wind (G50)
	Power	r lines were blown down. The wind speed is est	imated.		
Crow Wing County					
Brainerd	22	2315CST	0	0	Thunderstorm Wind (G50)
	Trees	were blown down. The wind speed is estimated	l.		
Crow Wing County		r			
Crow Wing County Deerwood	22	2315CST	0	0	Thursdaystown Wind (C50)
Deel wood		and large branches were blown down. The wine			Thunderstorm Wind (G50)
	Tiees	and large branches were blown down. The wind	u speeu is	estimated.	
Aitkin County					
Aitkin	23	0000CST 0005CST	0	0	Thunderstorm Wind (G61)
	Winds	s measured at 70 mph blew down trees in the cit	ty and caus	sed damage to planes and hang	ers at the Aitkin Municipal Airport
	vv ma.	s incustred at 70 mph blew down trees in the cr	ty and cad.	sed damage to planes and hang	ers at the Mikin Municipal Milport.
Aitkin County	23	0025CST	0	0	TI 1 (C.50)
Mc Gregor			0	0	Thunderstorm Wind (G50)
	Trees	were blown down. The wind speed is estimated	1.		
Carlton County					
Kettle River	23	0038CST	0	0	Thunderstorm Wind (G50)
	Trees	were blown down. The wind speed is estimated	l.		
Pine County					
Sturgeon Lake	23	0041CST	0	0	Thunderstorm Wind (G50)
-	Trees	were blown down. The wind speed is estimated	l.		, ,
Carlton County		*			
Moose Lake	23	0042CST	0	0	Thunderstorm Wind (G50)
HIOUSE DUNC		were blown down. The wind speed is estimated		v	Thunderstorm wind (G50)
	11008	mere stown down. The wind speed is estillated	••		
St. Louis County	22	0100 CCT		0	
3 S Floodwood	23	0100CST	0	0	Thunderstorm Wind (G50)





July 1999 Time Local/ Path Length Path Width Number of Estimated Persons Damage MINNESOTA, Northeast Numerous trees were blown down. The wind speed is estimated. **Carlton County** 0116CST 0 Cloquet Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Lake County** Two Harbors 25 Thunderstorm Wind (G50) Six-inch diameter trees were blown down. The wind speed is estimated. **Itasca County Squaw Lake** 25 1435CST Thunderstorm Wind (G52) **Itasca County Bigfork** 25 1525CST Thunderstorm Wind (G61) **Itasca County** 25 1538CST 4 S Bigfork 0 Thunderstorm Wind (G61) **Crow Wing County** 25 1545CST 1600CST 3 Cross Lake Thunderstorm Wind (G70) Several recreational vehicles at a campground were damaged or destroyed, with three minor injuries. Many trees were blown down, and there was some damage to mobile homes and several other vehicles **Itasca County** 1549CST **Deer River** 25 0 0 Thunderstorm Wind (G70) **Crow Wing County** Nisswa 25 1553CST Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Crow Wing County** Cross Lake 25 1553CST Thunderstorm Wind (G50) Numerous trees were blown down. The wind speed is estimated. **Cass County** 1608CST Cass Lake 25 0 Thunderstorm Wind (G50) Large trees were blown down. The wind speed is estimated. St. Louis County Hibbing 25 1615CST 0 Thunderstorm Wind (G52) St. Louis County Hibbing 25 1620CST 0 Thunderstorm Wind (G61) **Aitkin County** 3 SE Tamarack 25 1630CST Thunderstorm Wind (G60) Trees were knocked down and the roofs were blown off of two farmsteads. Aitkin County Jacobson 25 1636CST Thunderstorm Wind (G55) Numerous trees were blown down in the Savanna State Forest. The wind speed is estimated. **Aitkin County** Palisade 25 Thunderstorm Wind (G55) Numerous trees and power lines were blown down. The wind speed is estimated. **Carlton County** Mahtowa Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. St. Louis County Floodwood 25 1715CST Thunderstorm Wind (G50)

Trees and power lines were blown down. The wind speed is estimated.



Pine County Brook Park

30

1510CST

Trees were blown down. The wind speed is estimated.

National Weather Service Storm Data and Unusual Weather Phenomena



Thunderstorm Wind (G50)

July 1999 Time Local/ Path Length Path Width Number of Estimated Persons Damage MINNESOTA, Northeast St. Louis County **Mountain Iron** 25 1720CST 0 0 Thunderstorm Wind (G50) Power lines and large trees were blown down. The wind speed is estimated. St. Louis County Duluth 1732CST 1736CST 25 Thunderstorm Wind (G56) Winds to 65 mph were reported at Chester Bowl Park, blowing down 12-inch diameter trees. St. Louis County 25 Duluth 1751CST Thunderstorm Wind (G50) Six-inch diameter trees were blown down. The wind speed is estimated. St. Louis County **Duluth** 25 Thunderstorm Wind (G50) Six-inch diameter branches were blown down. The wind speed is estimated. **Lake County Knife River** 25 1803CST Thunderstorm Wind (G50) Six-inch diameter trees were blown down. The wind speed is estimated. **Itasca County Squaw Lake** 27 1621CST 0 0 Hail (0.75) **Itasca County** 27 **Squaw Lake** 1648CST 0 Hail (1.50) **Cass County** Cass Lake 27 1652CST Hail (0.75) **Itasca County** 27 **Bigfork** 1720CST 0 Hail (0.75) **Itasca County** 27 1753CST Marble 0 Hail (0.75) **Itasca County** Bovey 27 1806CST Hail (1.00) St. Louis County 2 S Toivola 1859CST 8.3 27 Tornado (F0) 1900CST A sheriff deputy reported a very brief touchdown of a weak tornado that caused no damage. The path length was only about 50 feet. **Crow Wing County** Ft Ripley 28 2337CST 0 Hail (0.75) **Crow Wing County** 10 E Ft Ripley 28 2346CST 0 0 Hail (1.75) **Koochiching County International Falls** 29 0006CST Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. St. Louis County Cook 29 0 Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Pine County** Hinckley **30** 1510CST Hail (1.00)

0





Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)		aber of rsons Injured	Estimated Damage Property Crops	July 1999 Character of Storm	
MINNESOTA, North	<u>heast</u>								
Pine County									
Askov	30	1540CST			0	0		Thunderstorm Wind (G52)	
Carlton County Holyoke	30 Tree	1612CST limbs up to 12 incl	hes in diamet	er were blow	0 n down. Th	0 ne wind spe	eed is estimated.	Thunderstorm Wind (G50)	
WISCONSIN, North	<u>west</u>								
Bayfield County									
Bayfield	04 Trees	2030CST s were blown down	n. The wind s	peed is estim	0 ated.	0		Thunderstorm Wind (G50)	
Bayfield County									
North Portion	05	0820CST 1800CST			0	0	500K	Flash Flood	
	High	ways and bridges i	near Port Win	g, Bayfield,	and Washb	urn were f	looded by heavy rain	n from slow-moving thunderstorms	
Douglas County									
Solon Springs	05	1515CST sup to 20 inches in	diameter we	ra blown dos	0 vn. The wir	0 ad speed is	actimated	Thunderstorm Wind (G55)	
Bayfield County	11008	s up to 20 menes n	i diameter we	ie blowii dov	wii. The wii	iu speeu is	estimated.		
5 E Iron River	05 Trees	1515CST s were blown down	n in the Long	Lake area. T	0 the wind spe	0 eed is estin	nated.	Thunderstorm Wind (G50)	
Bayfield County									
18 S Iron River	05	1520CST			0	0		Thunderstorm Wind (G50)	
	Trees	and power lines v	vere blown do	own around I	Barnes. The	wind spee	ed is estimated.		
Douglas County 6 E Gordon	05	1525CST			0	0		Thunderstorm Wind (G50)	
v D doravii		s were blown down	Thunderstorm wind (030)						
Bayfield County									
Drummond	05 Trees	1526CST and power lines v	vere blown do	own. The wir	0 nd speed is	0 estimated.		Thunderstorm Wind (G50)	
Bayfield County	0.5	1 = 20 CCT							
5 SE Drummond		1530CST leven-year-old boy p. M11CA	was killed w	when he was	struck by	0 a falling tr	ee as he was heading	Thunderstorm Wind (G50) ng for shelter at the Chequamegon Boy's	
Ashland County	C	y							
Ashland	05	1534CST 1540CST			0	0		Thunderstorm Wind (G52)	
	Tree	branches and pow	er lines were	blown down.					
Iron County Saxon	05	1540CST			0	0		Thunderstorm Wind (G55)	
₩.AVII	Power lines and 3-foot diameter trees were blown down across U.S. Highway 2, and there was some structural damage in tarea. The wind speed is estimated.								
Bayfield County									
Namekagon	05	1546CST			0	0		Thunderstorm Wind (G50)	
• ~	Trees	and power lines v	were blown do	own. The wir	nd speed is	estimated.			
Iron County Hurley	05	1605CST			0	0		Thunderstorm Wind (G50)	
1101103		1002001	1.1 1	mu ·	1 1.	1		Thunderstorm willa (G30)	

Trees and power lines were blown down. The wind speed is estimated.





Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Numl Per Killed	per of sons Injured	Estimated Damage Property Crops	July Character of Storm	y 1999
WISCONSIN, Northy	<u>vest</u>								
Burnett County Webster	09	1310CST			0	0		Hail (1.00)	
Bayfield County									
Central Portion	14	2000CST 2240CST			0	0	500K	Flash Flood	
	Heav	y thunderstorm rai	ns caused U.S	S. Highway 2	and State I	Highway 1	18 to flood and partia	lly wash out.	
Bayfield County Namekagon	14	2125CST			0	0		Hail (1.75)	
Burnett County								22412 (2772)	
Grantsburg	23	0050CST			0	0		Thunderstorm Wind (G5	0)
	Trees	and power lines w	vere blown do	own. The win	d speed is e	estimated.			
Douglas County	22	0122CCT			0	0		TO 1 4 100	2
Superior	23	0133CST			0	0		Thunderstorm Wind (G5	2)
Sawyer County 21 ENE Hayward	23	0220CST			0	0		Thunderstorm Wind (G5	(5)
•	Trees	up to 3 feet in dia	meter were kı	nocked dowr	. The wind	speed is e	stimated.		- /
Sawyer County									
Hayward	23	0220CST	., .	mı :	0	0		Thunderstorm Wind (G5	0)
7. 6	Trees	and power lines w	vere blown do	own. The win	id speed is e	estimated.			
Price County 5 S Phillips	23	0310CST			0	0		Thunderstorm Wind (G5	(O)
C 5 1ps		and power lines w	vere blown do	wn. The win	ıd speed is e			Thunderstorm wind (G5	0)
Iron County									
Mercer	23	0340CST			0	0		Thunderstorm Wind (G5	0)
	Trees	were blown down	i. The wind sp	beed is estima	ated.				
Ashland County Ashland	23	0350CST			0	0		Thunderstorm Wind (G5	(A)
7151111111			vere blown do	wn. A windo	v		vas broken. The wind	,	0)
Douglas County									
Solon Springs	25 Trees	1850CST and power lines w	vere blown do	wn The win	0 ud speed is e	0 estimated		Thunderstorm Wind (G5	0)
Burnett County	11003	and power mies v	vere brown do	wii. The wii	ia speca is c	stillated.			
Hertel	25	1850CST			0	0		Thunderstorm Wind (G5	0)
	Trees	and power lines w	vere blown do	wn. The win	d speed is e	estimated.			
Washburn County									
Minong	25	1900CST were blown down	The wind or	and is astim	0 ntad	0		Thunderstorm Wind (G5	0)
Bayfield County	11668	were blown down	i. The white sp	beed is estilli	aicu.				
Moquah	25	1910CST			0	0		Thunderstorm Wind (G5	0)
_	Large	trees were blown	down. The w	ind speed is	estimated.				•
Sawyer County									
Hayward	25	1919CST	m	dadaa 11	0	0		Thunderstorm Wind (G5	0)
g	Large	trees were blown	down. The w	ina speed is	estimated.				
Sawyer County Hayward	25	1937CST			0	0		Thunderstorm Wind (G5	(0)
		trees were blown	down. The w	ind speed is		~		manacistoriii Willia (GS	~,
	•								





July 1999 Time Local/ Path Length Path Width Number of Estimated Persons Damage WISCONSIN, Northwest **Sawyer County** 25 2003CST 0 0 Hayward Thunderstorm Wind (G50) A tree was blown down on to a house. The wind speed is estimated. **Ashland County Butternut** 25 2004CST Thunderstorm Wind (G52) A weather spotter estimated thunderstorm winds at 60 mph. **Sawyer County** 25 Hayward 2030CST 0 Thunderstorm Wind (G50) Large trees were blown down. The wind speed is estimated. **Sawyer County** Winter Thunderstorm Wind (G50) Large trees were blown down. The wind speed is estimated. **Sawyer County Stone Lake** 25 2030CST 0 Thunderstorm Wind (G50) Large trees were blown down. The wind speed is estimated. **Douglas County** 2030CST 2330CST Countywide 25 2MFlash Flood Flash flooding caused by very heavy thunderstorm rains occurred across much of the county, with many roads washed out or under water. Hardest hit was the central part of the county, including Parkland, Oakland, and Solon Springs townships. U.S. Highway 53 in the city of Solon Springs and County Highway C near South Range were under several feet of water through the night, and traffic had to be rerouted. Streets and basements in the city of Superior were also flooded. The total cost of damage county-wide was nearly \$2 million. **Price County** Catawba 25 2137CST 0 Thunderstorm Wind (G52) **Burnett County** 30 1658CST **Danbury** Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Douglas County** 1703CST Wascott 30 Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. **Washburn County** 0 Minong 30 0 Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Bayfield County Drummond** 30 1730CST 0 Hail (1.00) **Bayfield County** Cable 30 1730CST Hail (1.00) **Bayfield County** 18 S Iron River 30 1730CST 0 Hail (1.00) Washburn County 30 1732CST O 0 Spooner Thunderstorm Wind (G55) Trees and power lines were blown down, and some roofs were torn off. The wind speed is estimated **Bayfield County** 30 1740CST Grandview Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated.





July 1999 Estimated Time Local/ Path Length Path Width Number of Persons Damage WISCONSIN, Northwest **Sawyer County** Hayward 30 1745CST 0 0 Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. **Douglas County** 10 E Solon Springs 30 1758CST Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Ashland County** 30 1815CST Mellen Thunderstorm Wind (G87) Trees were blown down. Observers estimated wind speeds at 70 mph sustained, with gusts to 100 mph. **Ashland County** Glidden 30 1825CST Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. The strong thunderstorm winds caused an estimated \$243,000 in damage across Ashland county. **Sawyer County** 30 1838CST Loretta Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated. **Price County** 5 SW Phillips 30 500K Thunderstorm Wind (G76) The strong winds blew down trees and power lines and flipped a boat and trailer, tossing them 71 feet. A tree fell on a house, puncturing holes in the roof. The strong winds also blew a 33-inch diameter pine tree down across a minivan, causing minor injuries to 2 people. **Iron County** 1900CST 30 0 Saxon 0 Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Iron County** Montreal 30 1900CST Thunderstorm Wind (G50) Trees were blown down. The wind speed is estimated. **Price County** 30 1915CST Catawba Thunderstorm Wind (G60) A barn was blown down. The wind speed is estimated. **Price County Prentice** Thunderstorm Wind (G65) Trees and power lines were blown down. A semi-trailer was overturned. Damage from all July storms in Price county was estimated at \$186,500. **Iron County** Manitowish Thunderstorm Wind (G50) Trees and power lines were blown down. The wind speed is estimated.

Damage from all July storms in Iron county was estimated at \$79,000.